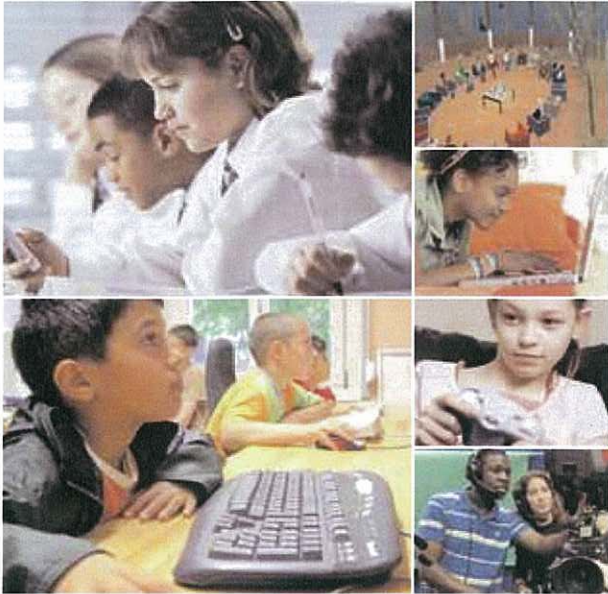


Building the Field of  
Digital Media and Learning |



An occasional paper on digital media and learning

# Confronting the Challenges of Participatory Culture: Media Education for the 21<sup>st</sup> Century

Henry Jenkins, Director of the Comparative Media Studies Program  
at the Massachusetts Institute of Technology

with

Katie Clinton  
Ravi Purushotma  
Alice J. Robison  
Margaret Weigel

**MACARTHUR**  
The John D. and Catherine T. MacArthur Foundation



**Building the new field of digital media and learning**

The MacArthur Foundation launched its five-year, \$50 million digital media and learning initiative in 2006 to help determine how digital technologies are changing the way young people learn, play, socialize, and participate in civic life. Answers are critical to developing educational and other social institutions that can meet the needs of this and future generations. The initiative is both marshaling what it is already known about the field and seeding innovation for continued growth. For more information, visit [www.digitalllearning.macfound.org](http://www.digitalllearning.macfound.org). To engage in conversations about these projects and the field of digital learning, visit the Spotlight blog at [spotlight.macfound.org](http://spotlight.macfound.org).

**About the MacArthur Foundation**

The John D. and Catherine T. MacArthur Foundation is a private, independent grantmaking institution dedicated to helping groups and individuals foster lasting improvement in the human condition. With assets of \$5.5 billion, the Foundation makes grants totaling approximately \$200 million annually. For more information or to sign up for MacArthur's monthly electronic newsletter, visit [www.macfound.org](http://www.macfound.org).

The MacArthur Foundation  
140 South Dearborn Street, Suite 1200  
Chicago, Illinois 60603  
Tel. (312) 726-8000  
[www.digitalllearning.macfound.org](http://www.digitalllearning.macfound.org)

Building the Field of  
Digital Media and Learning |

An occasional paper on digital media and learning

# Confronting the Challenges of Participatory Culture: Media Education for the 21<sup>st</sup> Century

Henry Jenkins, Director of the Comparative Media Studies Program  
at the Massachusetts Institute of Technology

with

Katie Clinton  
Ravi Purushotma  
Alice J. Robison  
Margaret Weigel

**MACARTHUR**  
The John D. and Catherine T. MacArthur Foundation

---

## **Table of Contents**

Executive Summary	3
The Needed Skills in the New Media Culture	5
Enabling Participation	7
Why We Should Teach Media Literacy: Three Core Problems	12
What Should We Teach? Rethinking Literacy	19
Core Media Literacy Skills	22
Who Should Respond? A Systemic Approach to Media Education	56
The Challenge Ahead: Ensuring that All Benefit from the Expanding Media Landscape	61
Sources	62



---

## Executive Summary

According to a recent study from the Pew Internet & American Life project (Lenhardt & Madden, 2005), more than one-half of all teens have created media content, and roughly one-third of teens who use the Internet have shared content they produced. In many cases, these teens are actively involved in what we are calling *participatory cultures*. A participatory culture is a culture with relatively low barriers to artistic expression and civic engagement, strong support for creating and sharing one's creations, and some type of informal mentorship whereby what is known by the most experienced is passed along to novices. A participatory culture is also one in which members believe their contributions matter, and feel some degree of social connection with one another (at the least they care what other people think about what they have created). Forms of participatory culture include:

**Affiliations** — memberships, formal and informal, in online communities centered around various forms of media, such as Friendster, Facebook, message boards, metagaming, game clans, or MySpace).

**Expressions** — producing new creative forms, such as digital sampling, skinning and modding, fan videomaking, fan fiction writing, zines, mash-ups).

**Collaborative Problem-solving** — working together in teams, formal and informal, to complete tasks and develop new knowledge (such as through *Wikipedia*, alternative reality gaming, spoiling).

**Circulations** — Shaping the flow of media (such as podcasting, blogging).

A growing body of scholarship suggests potential benefits of these forms of participatory culture, including opportunities for peer-to-peer learning, a changed attitude toward intellectual property, the diversification of cultural expression, the development of skills valued in the modern workplace, and a more empowered conception of citizenship. Access to this participatory culture functions as a new form of the hidden curriculum, shaping which youth will succeed and which will be left behind as they enter school and the workplace.

Some have argued that children and youth acquire these key skills and competencies on their own by interacting with popular culture. Three concerns, however, suggest the need for policy and pedagogical interventions:

**The Participation Gap** — the unequal access to the opportunities, experiences, skills, and knowledge that will prepare youth for full participation in the world of tomorrow.

**The Transparency Problem** — The challenges young people face in learning to see clearly the ways that media shape perceptions of the world.

**The Ethics Challenge** — The breakdown of traditional forms of professional training and socialization that might prepare young people for their increasingly public roles as media makers and community participants.

Educators must work together to ensure that every American young person has access to the skills and experiences needed to become a full participant, can articulate their understanding of

---

how media shapes perceptions, and has been socialized into the emerging ethical standards that should shape their practices as media makers and participants in online communities.

A central goal of this report is to shift the focus of the conversation about the digital divide from questions of technological access to those of opportunities to participate and to develop the cultural competencies and social skills needed for full involvement. Schools as institutions have been slow to react to the emergence of this new participatory culture; the greatest opportunity for change is currently found in afterschool programs and informal learning communities. Schools and afterschool programs must devote more attention to fostering what we call the new media literacies: a set of cultural competencies and social skills that young people need in the new media landscape. Participatory culture shifts the focus of literacy from one of individual expression to community involvement. The new literacies almost all involve social skills developed through collaboration and networking. These skills build on the foundation of traditional literacy, research skills, technical skills, and critical analysis skills taught in the classroom.

The new skills include:

- Play** — the capacity to experiment with one's surroundings as a form of problem-solving
- Performance** — the ability to adopt alternative identities for the purpose of improvisation and discovery
- Simulation** — the ability to interpret and construct dynamic models of real-world processes
- Appropriation** — the ability to meaningfully sample and remix media content
- Multitasking** — the ability to scan one's environment and shift focus as needed to salient details.
- Distributed Cognition** — the ability to interact meaningfully with tools that expand mental capacities
- Collective Intelligence** — the ability to pool knowledge and compare notes with others toward a common goal
- Judgment** — the ability to evaluate the reliability and credibility of different information sources
- Transmedia Navigation** — the ability to follow the flow of stories and information across multiple modalities
- Networking** — the ability to search for, synthesize, and disseminate information
- Negotiation** — the ability to travel across diverse communities, discerning and respecting multiple perspectives, and grasping and following alternative norms.

Fostering such social skills and cultural competencies requires a more systemic approach to media education in the United States. Everyone involved in preparing young people to go out into the world has contributions to make in helping students acquire the skills they need to become full participants in our society. Schools, afterschool programs, and parents have distinctive roles to play as they do what they can in their own spaces to encourage and nurture these skills.



---

## The Needed Skills in the New Media Culture

*“If it were possible to define generally the mission of education, it could be said that its fundamental purpose is to ensure that all students benefit from learning in ways that allow them to participate fully in public, community, [Creative] and economic life.”*

— New London Group (2000, p. 9)

Ashley Richardson (Jenkins, 2004b) was a middle-schooler when she ran for president of Alphaville. She wanted to control a government that had more than 100 volunteer workers and that made policies that affected thousands of people. She debated her opponent on National Public Radio. She found herself in the center of a debate about the nature of citizenship, about how to ensure honest elections, and about the future of democracy in a digital age. Alphaville is the largest city in the popular multiplayer game, *The Sims Online*.

Heather Lawver (H. Jenkins, 2006a) was 14 years old. She wanted to help other young people improve their reading and writing skills. She established an online publication with a staff of more than 100 people across the world. Her project was embraced by teachers and integrated into their curriculum. She emerged as an important spokesperson in a national debate about intellectual property. The website Lawver created was a school newspaper for the fictional Hogwarts, the location for the popular *Harry Potter* books.

Blake Ross (McHugh, 2005) was 14 years old when he was hired for a summer internship at Netscape. By that point, he already had developed computer programming skills and published his own website. Frustrated by many of the corporate decisions made at Netscape, Ross decided to design his own web browser. Through the joint participation of thousands of other volunteer youth and adults working on his project worldwide, the Firefox web browser was born. Today, Firefox enjoys more than 60 times as many users as Netscape Navigator. By age 19, Ross had the venture capital needed to launch his own start-up company. His interest in computing was sparked by playing the popular video game, *Sim City*.

Josh Meeter (Bertozzi & Jenkins, forthcoming) was about to graduate from high school when he completed the claymation animation for Awards Showdown, which subsequent was widely circulated on the web. Meeter negotiated with composer John Williams for the rights to use excerpts from his film scores. By networking, he was able to convince Stephen Spielberg to watch the film, and it was later featured on the Spielberg’s Dreamworks website. Meeter is now starting work on his first feature film.

Richardson, Lawver, Ross, and Meeter are the future politicians, activists, educators, writers, entrepreneurs, and media makers. The skills they acquired—learning how to campaign and govern; how to read, write, edit, and defend civil liberties; how to program computers and run a business; how to make a movie and get it distributed—are the kinds of skills we might hope our best schools would teach. Yet, none of these activities took place in schools. Indeed, many of these youth were frustrated with school; some dropped out and others chose to graduate early. They developed much of the skill and knowledge through their participation in the informal learning communities of fans and gamers.



---

Richardson, Lawver, Ross, and Meeter are exceptional individuals. In any given period, exceptional individuals will break all the rules and enjoy off-the-charts success—even at surprisingly young ages. But, Richardson, Lawver, Ross, and Meeter are perhaps less exceptional than one might at first imagine.

According to a 2005 study conducted by the Pew Internet and American Life project (Lenhardt & Madden, 2005), more than one-half of all American teens—and 57 percent of teens who use the Internet—could be considered media creators. For the purpose of the study, a media creator is someone who created a blog or webpage, posted original artwork, photography, stories or videos online or remixed online content into their own new creations. Most have done two or more of these activities. One-third of teens share what they create online with others, 22 percent have their own websites, 19 percent blog, and 19 percent remix online content.

Contrary to popular stereotypes, these activities are not restricted to white suburban males. In fact, urban youth (40 percent) are somewhat more likely than their suburban (28 percent) or rural (38 percent) counterparts to be media creators. Girls aged 15–17 (27 percent) are more likely than boys their age (17 percent) to be involved with blogging or other social activities online. The Pew researchers found no significant differences in participation by race-ethnicity.

---

***According to a 2005 study conducted by the Pew Internet and American Life project, more than one-half of all American teens—and 57 percent of teens who use the Internet—could be considered media creators.***

---

If anything, the Pew study undercounts the number of American young people who are embracing the new participatory culture. The Pew study did not consider newer forms of expression, such as podcasting, game modding or machinima. Nor did it count other forms of creative expression and appropriation, such as music sampling in the hip hop community. These forms are highly technological but use other tools and tap other networks for their production and distribution. The study does not include even more widespread practices, such as

computer or video gaming, that can require an extensive focus on constructing and performing as fictional personas. Our focus here is not on individual accomplishment but rather the emergence of a cultural context that supports widespread participation in the production and distribution of media.

---

## Enabling Participation

*“While to adults the Internet primarily means the world wide web, for children it means email, chat, games— and here they are already content producers. Too often neglected, except as a source of risk, these communication and entertainment focused activities, by contrast with the information-focused uses at the centre of public and policy agendas, are driving emerging media literacy. Through such uses, children are most engaged— multi-tasking, becoming proficient at navigation and manoeuvre so as to win, judging their participation and that of others, etc.... In terms of personal development, identity, expression and their social consequences— participation, social capital, civic culture- these are the activities that serve to network today’s younger generation.”*

—Livingstone, 2003, pp.15-16).

### Participatory Culture

For the moment, let’s define participatory culture as one:

1. With relatively low barriers to artistic expression and civic engagement
2. With strong support for creating and sharing one’s creations with others
3. With some type of informal mentorship whereby what is known by the most experienced is passed along to novices
4. Where members believe that their contributions matter
5. Where members feel some degree of social connection with one another (at the least they care what other people think about what they have created).

Not every member must contribute, but all must believe they are free to contribute when ready and that what they contribute will be appropriately valued.

---

***Participatory culture shifts the focus of literacy from one of individual expression to community involvement.***

---

In such a world, many will only dabble, some will dig deeper, and still others will master the skills that are most valued within the community. The community itself, however, provides strong incentives for creative expression and active participation.

Historically, we have valued creative writing or art classes because they help to identify and train future writers and artists, but also because the creative process is valuable on its own; every child deserves the chance to express him- or herself through words, sounds, and images, even if most will never write, perform, or draw professionally. Having these experiences, we believe, changes the way youth think about themselves and alters the way they look at work created by others.

Most public policy discussion of new media have centered on technologies—tools and their affordances. The computer is discussed as a magic black box with the potential to create a learning revolution (in the positive version) or a black hole that consumes resources that might better be devoted to traditional classroom activities (in the more critical version). Yet, as the quote above suggests, media operate in specific cultural and institutional contexts that determine how and why they are used. We may never know whether a tree makes a sound when it falls in a forest with no one around. But clearly, a computer does nothing in the absence of a



---

user. The computer does not operate in a vacuum. Injecting digital technologies into the classroom necessarily affects our relationship with every other communications technology, changing how we feel about what can or should be done with pencils and paper, chalk and blackboard, books, films, and recordings.

Rather than dealing with each technology in isolation, we would do better to take an ecological approach, thinking about the interrelationship among all of these different communication technologies, the cultural communities that grow up around them, and the activities they support. Media systems consist of communication technologies and the social, cultural, legal, political, and economic institutions, practices, and protocols that shape and surround them (Gitelman, 1999). The same task can be performed with a range of different technologies, and the same technology can be deployed toward a variety of different ends. Some tasks may be easier with some technologies than with others, and thus the introduction of a new technology may inspire certain uses. Yet, these activities become widespread only if the culture also supports them, if they fill recurring needs at a particular historical juncture. It matters what tools are available to a culture, but it matters more what that culture chooses to do with those tools.

That is why we focus in this paper on the concept of participatory cultures rather than on interactive technologies. Interactivity (H. Jenkins, 2006a) is a property of the technology, while participation is a property of culture. Participatory culture is emerging as the culture absorbs and responds to the explosion of new media technologies that make it possible for average consumers to archive, annotate, appropriate, and recirculate media content in powerful new ways. A focus on expanding access to new technologies carries us only so far if we do not also foster the skills and cultural knowledge necessary to deploy those tools toward our own ends.

We are using participation as a term that cuts across educational practices, creative processes, community life, and democratic citizenship. Our goals should be to encourage youth to develop the skills, knowledge, ethical frameworks, and self-confidence needed to be full participants in contemporary culture. Many young people are already part of this process through:

**Affiliations** — memberships, formal and informal, in online communities centered around various forms of media, such as Friendster, Facebook, message boards, metagaming, game clans, or MySpace).

**Expressions** — producing new creative forms, such as digital sampling, skinning and modding, fan videomaking, fan fiction writing, zines, mash-ups).

**Collaborative Problem-solving** — working together in teams, formal and informal, to complete tasks and develop new knowledge (such as through Wikipedia, alternative reality gaming, spoiling).

**Circulations** — Shaping the flow of media (such as podcasting, blogging)

The MacArthur Foundation has launched an ambitious effort to document these activities and the roles they play in young people's lives. We do not want to preempt or duplicate that effort here. For the moment, it is sufficient to argue that each of these activities contains opportunities for learning, creative expression, civic engagement, political empowerment, and economic advancement.



---

Through these various forms of participatory culture, young people are acquiring skills that will serve them well in the future. Participatory culture is reworking the rules by which school, cultural expression, civic life, and work operate. A growing body of work has focused on the value of participatory culture and its long-term impact on children's understanding of themselves and the world around them.

### **Affinity Spaces**

Many have argued that these new participatory cultures represent ideal learning environments. Gee (2004) calls such informal learning cultures "affinity spaces," asking why people learn more, participate more actively, engage more deeply with popular culture than they do with the contents of their textbooks. Affinity spaces offer powerful opportunities for learning, Gee argues, because they are sustained by common endeavors that bridge differences in age, class, race, gender, and educational level, and because people can participate in various ways according to their skills and interests, because they depend on peer-to-peer teaching with each participant constantly motivated to acquire new knowledge or refine their existing skills, and because they allow each participant to feel like an expert while tapping the expertise of others. For example, Black (2005a,b) finds that the "beta-reading" (or editorial feedback) provided by online fan communities helps contributors grow as writers, mastering not only the basic building blocks of sentence construction and narrative structure, but also pushing them to be close readers of the works that inspire them. Participants in the beta-reading process learn both by receiving feedback on their own work and by giving feedback to others, creating an ideal peer-to-peer learning community.

Affinity spaces are distinct from formal educational systems in several ways. While formal education is often conservative, the informal learning within popular culture is often experimental. While formal education is static, the informal learning within popular culture is innovative. The structures that sustain informal learning are more provisional, those supporting formal education are more institutional. Informal learning communities can evolve to respond to short-term needs and temporary interests, whereas the institutions supporting public education have remained little changed despite decades of school reform. Informal learning communities are ad hoc and localized; formal educational communities are bureaucratic and increasingly national in scope. We can move in and out of informal learning communities if they fail to meet our needs; we enjoy no such mobility in our relations to formal education.

Affinity spaces are also highly generative environments, from which new aesthetic experiments and innovations emerge. A 2005 report on *The Future of Independent Media* (Blau, 2005) argued that this kind of grassroots creativity was an important engine of cultural transformation:

The media landscape will be reshaped by the bottom-up energy of media created by amateurs and hobbyists as a matter of course. This bottom up energy will generate enormous creativity, but it will also tear apart some of the categories that organize the lives and work of media makers...A new generation of media-makers and viewers are emerging which could lead to a sea change in how media is made and consumed. (p. 3)

---

Blau's report celebrates a world in which everyone has access to the means of creative expression and the networks supporting artistic distribution. The Pew study (Lenhardt & Madden, 2005) suggests something more: young people who create and circulate their own media are more likely to respect the intellectual property rights of others because they feel a greater stake in the cultural economy. Both reports suggest we are moving away from a world in which some produce and many consume media, toward one in which everyone has a more active stake in the culture that is produced.

Buckingham (2000) argues that young people's lack of interest in news and their disconnection from politics reflects their perception of disempowerment. "By and large, young people are not

---

***We are moving away from a world in which some produce and many consume media, toward one in which everyone has a more active stake in the culture that is produced.***

---

defined by society as political subjects, let alone as political agents. Even in the areas of social life that affect and concern them to a much greater extent than adults—most notably education—political debate is conducted almost entirely 'over their heads'" (pp. 218–219). Politics, as constructed by the news, becomes a spectator sport, something we watch but do not do. Yet, the new participatory culture offers many opportunities for youth to engage in civic debates, to participate in community

life, to become political leaders, even if sometimes only through the "second lives" offered by massively multiplayer games or online fan communities.

Empowerment comes from making meaningful decisions within a real civic context: we learn the skills of citizenship by becoming political actors and gradually coming to understand the choices we make in political terms. Today's children learn through play the skills they will apply to more serious tasks later. The challenge is how to connect decisions in the context of our everyday lives with the decisions made at local, state, or national levels. The step from watching television news and acting politically seems greater than the transition from being a political actor in a game world to acting politically in the "real world."

Participating in these affinity spaces also has economic implications. We suspect that young people who spend more time playing within these new media environments will feel greater comfort interacting with one another via electronic channels, will have greater fluidity in navigating information landscapes, will be better able to multitask and make rapid decisions about the quality of information they are receiving, and will be able to collaborate better with people from diverse cultural backgrounds. These claims are borne out by research conducted by Beck and Wade (2004) into the ways that early game play experiences affect subsequent work habits



---

and professional activities. Beck and Wade conclude that gamers were more open to taking risks and engaging in competition but also more open to collaborating with others and more willing to revise earlier assumptions.

This focus on the value of participating within the new media culture stands in striking contrast to recent reports from the Kaiser Family Foundation (2005a,b) that have bemoaned the amount of time young people spend on “screen media.” The Kaiser reports collapse a range of different media consumption and production activities into the general category of “screen time” without reflecting very deeply on the different degrees of social connectivity, creativity, and learning involved. We do not mean to dismiss the very real concerns they raise: that mediated experience may squeeze out time for other learning activities; that contemporary children often lack access to real world play spaces, with adverse health consequences, that adults may inadequately supervise and interact with children about the media they consume (and produce); or concerns about the moral values and commercialization in much contemporary entertainment. Yet, the focus on negative effects of media consumption offers an incomplete picture. These accounts do not appropriately value the skills and knowledge young people are gaining through their involvement with new media, and as a consequence, they may mislead us about the roles teachers and parents should play in helping children learn and grow.



---

## Why We Should Teach Media Literacy: Three Core Problems

Some defenders of the new digital cultures have acted as though youth can simply acquire these skills on their own without adult intervention or supervision. Children and youth do know more about these new media environments than most parents and teachers. In fact, we do not need to protect them so much as engage them in critical dialogues that help them to articulate more fully their intuitive understandings of these experiences. To say that children are not victims of media is not to say that they, any more than anyone else, have fully mastered what are, after all, complex and still emerging social practices.

There are three core flaws with the *laissez faire* approach. The first is that it does not address the fundamental inequalities in young people's access to new media technologies and the opportunities for participation they represent (what we call the *participation gap*). The second is that it assumes that children are actively reflecting on their media experiences and can thus articulate what they learn from their participation (what we call the *transparency problem*). The third problem with the *laissez faire* approach is that it assumes children, on their own, can develop the ethical norms needed to cope with a complex and diverse social environment online (the *ethics challenge*). Any attempt to provide meaningful media education in the age of participatory culture must begin by addressing these three core concerns.

### The Participation Gap

Cities around the country are providing wireless Internet access for their residents. Some cities, such as Tempe, Arizona, charge users a fee; others, such as Philadelphia, Boston, and Cambridge, plan to provide high-speed wireless Internet access free of charge. In an interview on PBS's *Nightly News Hour* in November 2005, Philadelphia mayor John Street spoke of the link between Internet access and educational achievement:

Philadelphia will allow low-income families, families that are on the cusp of their financial capacity, to be able to be fully and completely connected. We believe that our public school children should be—their families have to be connected or else they will fall behind, and, in many cases, never catch up (PBS, 2005).

Philadelphia's Emergency People's Shelter (EPS) is ahead of the curve; the nonprofit group's free network access serves shelter residents and the surrounding neighborhood. Gloria Guard of EPS said,

What we realized is if we can't get computers into the homes of our constituents and our neighbors and of this neighborhood, there are children in those households who will not be able to keep up in the marketplace. They won't be able to keep up with their schoolmates. They won't be able to even apply for college. We thought it was really important to get computer skills and connection to the Internet into as many homes as possible (PBS, 2005).

---

However, simply passing out technology is not enough. Expanding access to computers will help bridge some of the gaps between digital haves and have nots, but only in a context in which free wi-fi is coupled with new educational initiatives to help youth and adults learn how to use those tools effectively.

Throughout the 1990s, the country focused enormous energy in combating the digital divide in technological access. The efforts have ensured that most American youth have at least minimal access to networked computers at school or in public libraries. However, as a 2005 report on children's online experience in the United Kingdom (Livingstone & Bober, 2005) concluded:

No longer are children and young people only or even mainly divided by those with or without access, though 'access' is a moving target in terms of speed, location, quality and support, and inequalities in access do persist. Increasingly, children and young people are divided into those for whom the Internet is an increasingly rich, diverse, engaging and stimulating resource of growing importance in their lives and those for whom it remains a narrow, unengaging, if occasionally useful, resource of rather less significance (p. 12).

What a person can accomplish with an outdated machine in a public library with mandatory filtering software and no opportunity for storage or transmission pales in comparison to what person can accomplish with a home computer with unfettered Internet access, high bandwidth, and continuous connectivity. (Current legislation to block access to social networking software in schools and public libraries will further widen the participation gap.) The school system's inability to close this participation gap has negative consequences for everyone involved. On the one hand, those youth who are most advanced in media literacies are often stripped of their technologies and robbed of their best techniques for learning in an effort to ensure a uniform experience for all in the classroom. On the other hand, many youth who have had no exposure to these new kinds of participatory cultures outside school find themselves struggling to keep up with their peers.

Wartella, O'Keefe, and Scantlin (2000) reached a similar conclusion:

Closing the digital divide will depend less on technology and more on providing the skills and content that is most beneficial....Children who have access to home computers demonstrate more positive attitudes towards computers, show more enthusiasm and report more enthusiasm and ease when using computers than those who do not (p. 8).

More often than not, those youth who have developed the most comfort with the online world are the ones who dominate classroom use of computers, pushing aside less technically skilled classmates. We would be wrong, however, to see this as a simple binary: youth who have technological access and those who do not. Wartella and coauthors note, for example, that game systems make their way into a growing number of working-class homes, even if laptops and personal computers do not. Working-class youth may have access to some of the benefits of play described here, but they may still lack the ability to produce and distribute their own media.



---

In a 2005 report prepared for the MacArthur Foundation, Lyman finds that children's experiences online are shaped by a range of social factors, including class, age, gender, race, nationality, and point of access. He notes, for example, that middle-class youth are more likely to rely on resources and assistance from peers and family within their own homes, and thus seem more autonomous at school than working-class children, who must often rely more heavily on teachers and peers to make up for a lack of experience at home. The middle-class children thus seem "naturally" superior in their use of technology, further amplifying their own self-confidence in their knowledge.

Historically, those youth who had access to books or classical recordings in their homes, whose parents took them to concerts or museums, or who engaged in dinner conversation developed, almost without conscious consideration, skills that helped them perform well in school. Those experiences, which were widespread among the middle class and rare among the working class, became a kind of class distinction, which shaped how teachers perceived students. These new forms of cultural participation may be playing a similar role. These activities shape what skills and knowledge students bring into the classroom, and in this fashion determine how teachers and peers perceive these students. Castells tells us about youth who are excluded from these experiences: "Increasingly, as computer use is ever less a lifestyle option, ever more an everyday necessity, inability to use computers or find information on the web is a matter of stigma, of social exclusion; revealing not only changing social norms but also the growing centrality of computers to work, education and politics" (Castells, 2002, in Livingstone, 2003, p. 6).

Writing on how contemporary industry values our "portfolios" as much as our knowledge, Gee (2004) suggests that what gives elite teens their head start is their capacity to:

pick up a variety of experiences (e.g., the "right" sort of summer camps, travel, and special activities), skills (not just school-based skills, but a wide variety of interactional, aesthetic, and technological skills), and achievements (honors, awards, projects) in terms of which they can help to define themselves as worthy of admission to elite educational institutions and worthy of professional success later in life" (p.105).

They become adept at identifying opportunities for leadership and accomplishment; they adjust quickly to new situations, embrace new roles and goals, and interact with people of diverse backgrounds. Even if these opportunities are not formally valued by our educational institutions or listed on one's resume when applying for a job, the skills and self confidence gathered by moving across all of these online communities surely manifest themselves in other ways, offering yet another leg up to youth on one side and another disadvantage to youth on the opposite side of the participation gap.

### **The Transparency Problem**

Although youth are becoming more adept at using media as resources (for creative expression, research, social life, etc.), they often are limited in their ability to examine the media themselves. Turkle (1995) was among the first to call attention to this transparency problem:



---

Games such as *SimLife* teach players to think in an active way about complex phenomena (some of them ‘real life,’ some of them not) as dynamic, evolving systems. But they also encourage people to get used to manipulating a system whose core assumptions they do not see and which may or may not be ‘true’ (p. 70).

Not everyone agrees. In an essay on the game *Sim City*, Friedman (1995) contends that game players seek to identify and exploit the rules of the system in order to beat the game. The antagonistic relationship between player and game designer means that game players may be more suspicious of the rules structuring their experiences than are the consumers of many other kinds of media. Conversations about games expose flaws in games’ construction, which may also lead to questions about their governing assumptions. Subsequent games have, in fact, allowed players to reprogram the core models. One might argue, however, that there is a difference between trying to master the rules of the game and recognizing the ways those rules structure our perception of reality. It may be much easier to see what is in the game than to recognize what the game leaves out.

This issue of transparency crops up regularly in the first wave of field reports on the pedagogical use of games. Shrier (2005) developed a location-specific game for teaching American history, which was played in Lexington, Massachusetts; her game was designed to encourage reflection on competing and contradictory accounts of who fired the first shot of the American Revolution. The project asked students to experience the ways historians interpret evidence and evaluate competing truths. Such debates emerged spontaneously around the game-play experience. Yet Shrier was surprised by another phenomenon, the young people took the game’s representation of historical evidence at face value, acting as if all of the information in the game was authentic.

Shrier offers several possible explanations for this transparency problem, ranging from the legacy of textbook publishing, where instructional materials did not encourage users to question their structuring or their interpretation of the data, to the tendency to “suspend our disbelief” in order to have a more immersive play experience. Squire (2004) found similar patterns when he sought to integrate the commercial game, *Civilization III*, into world history classes. Students were adept at formulating “what if” hypotheses, which they tested through their game play. Yet, they lacked a vocabulary to critique how the game itself constructed history, and they had difficulty imagining how other games might represent the same historical processes in different terms. In both cases, students were learning how to read information from and through games, but they were not yet learning how to read games as texts, constructed with their own aesthetic norms, genre conventions, ideological biases, and codes of representation. These findings suggest the importance of coupling the pedagogical use of new media technologies with a greater focus on media literacy education.

These concerns about the transparency of games, even when used in instructional contexts, are closely related to concerns about how young people (or indeed, any of us) assess the quality of information we receive. As Hobbs (1999, no page number) has suggested, “Determining the truth value of information has become increasingly difficult in an age of increasing diversity and ease of access to information.” More recent work by the Harvard Good Works Project



---

(personal interview with Howard Gardner, 2006) has found that issues of format and design are often more important than issues of content in determining how much credibility young people attach to the content of a particular website (see also the chapter by Levine in the MacArthur Series, *Digital Media and Youth Civic Engagement*). This research suggests some tendency to read “professional” sites as more credible than “amateur” produced materials, although students lack a well developed set of standards for distinguishing between the two. In her recent book, *The Internet Playground*, Seiter (2005) expresses concern that young people were finding it increasingly difficult to separate commercial from noncommercial content in online environments: “The Internet is more like a mall than a library; it resembles a gigantic public relations collection more than it does an archive of scholars” (p. 38).

Increasingly, content comes to us already branded, already shaped through an economics of sponsorship, if not overt advertising. We do not know how much these commercial interests influence what we see and what we don’t see. Commercial interests even shape the order of listings on search engines in ways that are often invisible to those who use them. Increasingly, opportunities to participate online are branded such that even when young people produce and share their own media, they do so under terms set by commercial interests. Children, Seiter found, often had trouble identifying advertising practices in the popular Neopets site, in part because the product references were so integrated into the game. The children were used to a world where commercials stood apart from the entertainment content and equated branding with banner advertisements. This is where the transparency issue becomes especially dangerous. Seiter (2005) concludes, “The World Wide Web is a more aggressive and stealthy marketeer to children than television ever was, and children need as much information about its business practices as teachers and parents can give them” (p. 100). Children need a safe space within which they can master the skills they need as citizens and consumers, as they learn to parse through messages from self-interested parties and separate fact from falsehood as they begin to experiment with new forms of creative expression and community participation.

## **The Ethics Challenge**

*In Making Good: How Young People Cope with Moral Dilemmas at Work*, Fischman and coauthors (2004) discuss how young journalists learn the ethical norms that will define their future professional practice. These writers, they find, acquired their skills most often by writing for high school newspapers. For the most part, the authors suggest, student journalists worked in highly cohesive and insulated settings. Their work was supervised, for better or worse, by a range of adult authorities, some interested in promoting the qualities of good journalism, some concerned with protecting the reputation of the school. Their work was free of commercial constraints and sheltered from outside exposure. The ethical norms and professional practices they were acquiring were well understood by the adults around them.

Now, consider how few of those qualities might be applied to the emerging participatory cultures. In a world in which the line between consumers and producers is blurring, young people are finding themselves in situations that no one would have anticipated a decade or two ago.



---

Their writing is much more open to the public and can have more far-reaching consequences. The young people are creating new modes of expression that are poorly understood by adults, and as a result they receive little to no guidance or supervision. The ethical implications of these emerging practices are fuzzy and ill-defined. Young people are discovering that information they put online to share with their friends can bring unwelcome attention from strangers.

In professional contexts, professional organizations are the watchdog of ethical norms. Yet in more casual settings, there is seldom a watchdog. No established set of ethical guidelines shapes the actions of bloggers and podcasters, for example. How should teens decide what they should or should not post about themselves or their friends on *Live Journal* or *MySpace*? Different online communities have their own norms about what information should remain within the group and what can be circulated more broadly, and many sites depend on self-disclosure to police whether the participants are children or adults. Yet, many young people seem willing to lie to access those communities.

Ethics become much murkier in game spaces, where identities are assumed and actions are fictive, designed to allow broader rein to explore darker fantasies. That said, unwritten and often imperfectly shared norms exist about acceptable or unacceptable conduct. Essays, such as Julian Dibbel's "A Rape in Cyberspace" (1993), Henry Jenkins's "Playing Politics in Alphaville" (2004), and Always-black's "Bow Nigger" (2004) offer reminders that participants in these worlds understand the same experiences in very different terms and follow different ethical norms as they face off against each other.

*In Making Good*, Fischman and coauthors (2004) found that high school journalists felt constrained by the strong social ties in their high school, unwilling to publish some articles they believed would be received negatively by their peers or that might disrupt the social dynamics of their society. What constraints, if any, apply to in online realms? Do young people feel that same level of investment in their gaming guilds or their fan communities? Or does the ability to mask one's identity or move from one community to another mean there are less immediate consequences for antisocial behavior?

One important goal of media education should be to encourage young people to become more reflective about the ethical choices they make as participants and communicators and the impact they have on others. We may, in the short run, have to accept that cyberspace's ethical norms are in flux: we are taking part in a prolonged experiment in what happens when one lowers the barriers of entry into a communication landscape. For the present moment, asking and working through questions of ethical practices may be more valuable than the answers produced because the process will help everyone to recognize and articulate the different assumptions that guide their behavior.

---

As we think about meaningful pedagogical intervention, we must keep in mind three core concerns:

- How do we ensure that every child has access to the skills and experiences needed to become a full participant in the social, cultural, economic, and political future of our society?
- How do we ensure that every child has the ability to articulate his or her understanding of how media shapes perceptions of the world?
- How do we ensure that every child has been socialized into the emerging ethical standards that should shape their practices as media makers and as participants in online communities?

To address these challenges, we must rethink which core skills and competencies we want our children to acquire in their learning experiences. The new participatory culture places new emphasis on familiar skills that have long been central to American education; it also requires teachers to pay greater attention to the social skills and cultural competencies that are emerging in the new media landscape. In the next sections, we provide a framework for thinking about the type of learning that should occur if we are to address the participation gap, the transparency problem, and the ethics challenges.



---

## What Should We Teach? Rethinking Literacy

*“Adolescents need to learn how to integrate knowledge from multiple sources, including music, video, online databases, and other media. They need to think critically about information that can be found nearly instantaneously through out the world. They need to participate in the kinds of collaboration that new communication and information technologies enable, but increasingly demand. Considerations of globalization lead us toward the importance of understanding the perspective of others, developing a historical grounding, and seeing the interconnectedness of economic and ecological systems.”*

—Bertram C. Bruce (2002)

A definition of twenty-first century literacy offered by the New Media Consortium (2005) is “the set of abilities and skills where aural, visual, and digital literacy overlap. These include the ability to understand the power of images and sounds, to recognize and use that power, to manipulate and transform digital media, to distribute them pervasively, and to easily adapt them to new forms” (p. 8). We would modify this definition in two ways. First, textual literacy remains a central skill in the twenty-first century. Before students can engage with the new participatory culture, they must be able to read and write. Youth must expand their required competencies, not push aside old skills to make room for the new. Second, new media literacies should be considered a social skill.

New media literacies include the traditional literacy that evolved with print culture as well as the newer forms of literacy within mass and digital media. Much writing about twenty-first century literacies seems to assume that communicating through visual, digital, or audiovisual

---

***The new literacies almost all involve social skills developed through collaboration and networking. These skills build on the foundation of traditional literacy, research skills, technical skills, and critical analysis skills taught in the classroom.***

---

media will displace reading and writing. We fundamentally disagree. Before students can engage with the new participatory culture, they must be able to read and write. Just as the emergence of written language changed oral traditions and the emergence of printed texts changed our relationship to written language, the emergence of new digital modes of expression changes our relationship to printed texts. In some ways, as researchers such as Black (2005) and Henry Jenkins (2006a) have argued, the new digital cultures provide support systems to help youth improve their core competencies as readers and writers. They may provide opportunities, for example, through blogs or live journals, for young people to receive feedback on their writing and to gain experience in communicating with a larger public, experiences that might once have been restricted to student journalists. Even traditional literacies must change to reflect the media change taking place. Youth must expand their required competencies, not push aside old skills to make room for the new.

Beyond core literacy, students need research skills. Among other things, they need to know how to access books and articles through a library; to take notes on and integrate secondary sources; to assess the reliability of data; to read maps and charts; to make sense of scientific visualizations; to grasp what kinds of information are being conveyed by various systems of representation; to distinguish between fact and fiction, fact and opinion; to construct arguments and



---

marshal evidence. If anything, these traditional skills assume even greater importance as students venture beyond collections that have been screened by librarians and into the more open space of the web. Some of these skills have traditionally been taught by librarians who, in the modern era, are reconceptualizing their role less as curators of bounded collection and more as information facilitators who can help users find what they need, online or off, and can cultivate good strategies for searching material.

Students also need to develop technical skills. They need to know how to log on, to search, to use various programs, to focus a camera, to edit footage, to do some basic programming and so forth. Yet, to reduce the new media literacies to technical skills would be a mistake on the order of confusing penmanship with composition. Because the technologies are undergoing such rapid change, it is probably impossible to codify which technologies or techniques students must know.

As media literacy advocates have claimed during the past several decades, students also must acquire a basic understanding of the ways media representations structure our perceptions of the world; the economic and cultural contexts within which mass media is produced and circulated; the motives and goals that shape the media they consume; and alternative practices that operate outside the commercial mainstream. Such groups have long called for schools to foster a critical understanding of media as one of the most powerful social, economic, political, and cultural institutions of our era. What we are calling here the new media literacies should be taken as an expansion of, rather than a substitution for, the mass media literacies.

### **What New Skills Matter? New Social Skills and Cultural Competencies**

All of these skills are necessary, even essential, but they are not sufficient, which brings us to our second point about the notion of twenty-first century literacy: the new media literacies should be seen as social skills, as ways of interacting within a larger community, and not simply an individualized skill to be used for personal expression. The social dimensions of literacy are acknowledged in the New Media Consortium's (2005) report only in terms of the distribution of media content. We must push further by talking about how meaning emerges collectively and collaboratively in the new media environment and how creativity operates differently in an open-source culture based on sampling, appropriation, transformation, and repurposing.

The social production of meaning is more than individual interpretation multiplied; it represents a qualitative difference in the ways we make sense of cultural experience, and in that sense, it represents a profound change in how we understand literacy. In such a world, youth need skills for working within social networks, for pooling knowledge within a collective intelligence, for negotiating across cultural differences that shape the governing assumptions in different communities, and for reconciling conflicting bits of data to form a coherent picture of the world around them.



---

We must integrate these new knowledge cultures into our schools, not only through group work but also through long-distance collaborations across different learning communities. Students should discover what it is like to contribute their own expertise to a process that involves many intelligences, a process they encounter readily in their participation in fan discussion lists or blogging. Indeed, this disparate collaboration may be the most radical element of new literacies: they enable collaboration and knowledge-sharing with large-scale communities that may never personally interact. Schools are currently still training autonomous problem-solvers, whereas as students enter the workplace, they are increasingly being asked to work in teams, drawing on different sets of expertise, and collaborating to solve problems.

Changes in the media environment are altering our understanding of literacy and requiring new habits of mind, new ways of processing culture and interacting with the world around us. We are just beginning to identify and assess these emerging sets of social skills and cultural competencies. We have only a broad sense of which competencies are most likely to matter as

---

***The new media literacies should be seen as social skills, as ways of interacting within a larger community, and not simply an individualized skill to be used for personal expression.***

---

young people move from the realms of play and education and into the adult world of work and society. What follows, then, is a provisional list of eleven core skills needed to participate within the new media landscape. These skills have been identified both by reviewing the existing body of scholarship on new media literacies and by surveying the forms of informal learning taking place in the participatory culture. As suggested above, mastering these skills remains a key step in preparing young people “to participate fully in public, community, [Creative] and economic life” (New London Group, 2000, p. 9). In short, these are skills some youth are learning through participatory culture, but they are also skills that all youth need to learn if they are going to be equal participants in the world of tomorrow. We identify a range of activities that might be deployed in schools or afterschool programs, across a range of disciplines and subject matter, to foster these social skills and cultural competencies. These activities are by no means an exhaustive list but rather are simply illustrations of the kind of work already being done in each area. One goal of this report is to challenge those who have responsibility for teaching our young people to think more systematically and creatively about the many different ways they might build these skills into their day-to-day activities in ways that are appropriate to the content they are teaching.

---

## Core Media Literacy Skills

### **Play: the capacity to experiment with one's surroundings as a form of problem-solving**

Play, as psychologists and anthropologists have long recognized, is key in shaping children's relationship to their bodies, tools, communities, surroundings, and knowledge. Most of children's earliest learning comes through playing with the materials at hand. Through play, children try on roles, experiment with culturally central processes, manipulate core resources, and explore their immediate environments. As they grow older, play can motivate other forms of learning.

Pratt (1991) describes what her son and his friend learned through baseball card collecting:

Sam and Willie learned a lot about phonics that year by trying to decipher surnames on baseball cards, and a lot about cities, states, heights, weights, places of birth, stages of life... And baseball cards opened the door to baseball books, shelves and shelves of encyclopedias, magazines, histories, biographies, novels, books of jokes, anecdotes, cartoons, even poems.... Literacy began for Sam with the newly pronounceable names on the picture cards and brought him what has been easily the broadest, most varied, most rewarding, and most integrated experience of his 13-year life. (pp. 33-34)

Pratt's account suggests this playful activity motivated three very different kinds of learning. First, the activity itself demanded certain skills and practices, which had clear payoffs for academic subjects. For example, working out batting averages gave

---

*Schools are currently still training autonomous problem-solvers, whereas as students enter the workplace, they are increasingly being asked to work in teams, drawing on different sets of expertise, and collaborating to solve problems.*

---

Sam an occasion to rehearse his math skills; arranging his cards introduced him to the process of classification; and discussing the cards gave him reason to work on his communication skills. On another level, the cards provided a scaffold, which motivated and shaped his acquisition of other forms of school knowledge. The cards inspired Sam to think about the cities where the teams were located and acquire map-reading skills. The history of baseball provided a context through which to understand twentieth century American history. The interest in stadiums introduced some basics about architecture. Third, Sam devel-

oped a sense of himself as a learner: "He learned the meaning of expertise, of knowing about something well enough that you can start a conversation with a stranger and feel sure of holding your own" (Pratt, 1991, p. 34).

Game designer Scott Osterweill (*The Logical Journey of the Zoobinis*) has described the mental attitude that surrounds play as highly conducive for learning:

When children are deep at play they engage with the fierce, intense attention that we'd like to see them apply to their schoolwork. Interestingly enough, no matter how intent and focused a child is at that play, maybe even grimly determined they may be at that game



---

play, if you asked them afterwards, they will say that they were having fun. So, the fun of game play is not non-stop mirth but rather the fun of engaging of attention that demands a lot of you and rewards that effort. I think most good teachers believe that in the best moments, classroom learning can be the same kind of fun. But a game is a moment when the kid gets to have that in spades, when the kid gets to be focused and intent and hard-working and having fun at the same time.  
(Jenkins, 2006b)

You will note here a shift in emphasis from fun (which in our sometimes still puritanical culture gets defined as the opposite of seriousness) to engagement. When individuals play games, a fair amount of what they end up doing is not especially fun at the moment. It can be a grind, not unlike homework. The efforts allows the person to master skills, collect materials, or put things in their proper place in anticipation of a payoff down the line. The key is that this activity is deeply motivated. The individual is willing to go through the grind because there is a goal or purpose that matters to the person. When that happens, individuals are engaged, whether that be the engagement in professional lives or the learning process or the engagement that some find through playing games. For the current generation, games may represent the best way of tapping that sense of engagement with learning.

While, to date, much of the discussion of games and education has considered games as a tool to motivate youth to learn other kinds of content (Pratt's move from baseball cards to geography), there is a growing recognition that play itself, as a means of exploring and processing knowledge and of problem-solving, may be a valuable skill children should master in preparation for subsequent roles and responsibilities in the adult world.

Part of what makes play valuable as a mode of problem-solving and learning is that it lowers the emotional stakes of failing: players are encouraged to suspend some of the real world consequences of the represented actions, to take risks and learn through trial and error. The underlying logic is one of die and do over. As Gee (2003) has noted, children often feel locked out of the worlds described in their textbooks through the depersonalized and abstract prose used to describe them. Games construct compelling worlds players move through. Players feel a part of those worlds and have some stake in the events unfolding. Games not only provide a rationale for learning: what players learn is put immediately to use to solve compelling problems with real consequences in the world of the game. Game designer Will Wright (*Sim City*, *The Sims*) (Jenkins, 2005a) has argued:

In some sense, a game is nothing but a set of problems. We're actually selling people problems for 40 bucks a pop....And the more interesting games in my opinion are the ones that have a larger solution space. In other words, there's not one specific way to solve a puzzle, but, in fact, there's an infinite range of solutions. ....The game world becomes an external artifact of their internal representation of the problem space (p. 21).

For Wright, the player's hunger for challenge and complexity motivates them to pick up the game in the first place.

---

Games follow something akin to the scientific process. Players are asked to make their own discoveries and then apply what they learn to new contexts. No sooner does a player enter a

---

***Children often feel locked out of the worlds described in their textbooks through the depersonalized and abstract prose used to describe them. Games construct compelling worlds players move through. Players feel a part of those worlds and have some stake in the events unfolding.***

---

game than he or she begins by identifying core conditions and looking for problems that must be addressed. On the basis of the available information, the player poses a certain hypothesis about how the world works and the best ways of bringing its properties under their control. The player tests and refines that hypothesis through actions in the game, which either fail or succeed. The player refines the model of the world as he or she goes. More sophisticated games allow the person to do something more, to experiment with the properties of the world, framing new possibilities, which involves manipulating relevant variables and seeing what happens. Meta-gaming, the discourse that surrounds games, provides a context for players to reflect

on and articulate what they have learned through the game. Here, for example, is how Kurt Squire (in press) describes the meta-gaming that occurs with *Civilization III*:

Players enroll as advanced players, having spent dozens, if not hundreds of hours with the game and having mastered its basic rules. As players begin to identify and exploit loopholes, they propose and implement changes to the games' rules, identify superior strategies, and invent new game rule systems, including custom modifications and scenarios.

Some have expressed skepticism that schools should or could teach young people how to play. This resistance reflects the confusion between play as a source of fun and play as a form of engagement. Play in the context argued here is a mode of active engagement, one that encourages experimentation and risk-taking, one that views the process of solving a problem as important as finding the answer, one that offers clearly defined goals and roles that encourage strong identifications and emotional investments. This form of play is closely related to two other important skills, simulation and performance.

## **What Might Be Done**

Educators (in school and out) tap into play as a skill when they encourage free-form experimentation and open-ended speculation.

- History teachers ask students to entertain alternative history scenarios, speculating on what might have happened if Germany had won World War II or if Native Americans had colonized Europe. Such questions can lead to productive explorations centering on why and how certain events occurred, and what effect they had. Such questions also have no right and wrong answers; they emphasize creative thinking rather than memorization; they allow diverse levels of engagement; they allow students to feel less intimidated by adult expertise; and they also lend themselves to the construction of arguments and the mobilization of evidence.



- 
- Art and design students are turned loose with a diverse array of everyday materials and encouraged to use them to solve a specified design problem. Such activities encourage students to revisit familiar materials and everyday objects with fresh perspectives, to think through common problems from multiple directions, and to respect alternative responses to the same challenge. This approach is closely associated with the innovative design work of Ideo, a Palo Alto consultancy, but can also be seen in various reality television programs, such as *Project Runway* or *The Iron Chef*, which require contestants to adopt distinctive and multiple approaches to shared problems.
  - Games offer the potential to learn through a new form of direct experience. Physics teachers use the game *Supercharged*, which was developed as part of the MIT Games to Teach initiative, to help students to better understand core principles of electromagnetism. As a means for learning the laws of electromagnetism through first-hand experience, students navigate electromagnetic mazes by planting electrical charges that attract or repel their vehicles. Teachers can then build on this intuitive and experiential learning in the classroom, introducing equations, diagrams, or visualizations that help them to better understand the underlying principles that they are deploying and then sending them back to play through the levels again and improve their performance.

### **Simulation — the ability to interpret and construct dynamic models of real world processes**

New media provides powerful new ways of representing and manipulating information. New forms of simulation expand our cognitive capacity, allowing us to deal with larger bodies of information, to experiment with more complex configurations of data, to form hypotheses quickly and test them against different variables in real time. The emergence of systems-based thinking has arisen hand in hand with the development of digital simulations. Across a range of academic and professional fields, simulations can be effective in representing known knowledge or in testing emerging theories. Because simulations are dynamic, and because they are governed by the systematic application of grounding assumptions, they can be a tool for discovery as researchers observe the emergent properties of these virtual worlds. We learn through simulations by a process of trial and error: new discoveries lead researchers to refine their models, tweaking particular variables, trying out different contingencies. Educators have always known that students learn more through direct observation and experimentation than from reading about something in a textbook or listening to a lecture. Simulations broaden the kinds of experiences users can have with compelling data, giving us a chance to see and do things that would be impossible in the real world.

Contemporary video games allow youth to play with sophisticated simulations and, in the process, to develop an intuitive understanding of how we might use simulations to test our assumptions about the way the world works. Former head of Xerox Parc, John Seely Brown (Kahan, 2003), tells the story of a 16-year-old boy, Colin, for whom the game, *Caesar III*, had shaped his understanding of the ancient world:



---

Colin said: 'I don't want to study Rome in high school. Hell, I build Rome every day in my on-line game'...Of course, we could dismiss this narrative construction as not really being a meaningful learning experience, but a bit later he and his dad were engaged in a discussion about the meaningfulness of class distinctions—lower, middle, etc.—and his dad stopped and asked him what class actually means to him. Colin responded:

'Well, it's how close you are to the Senate.'

'Where did you learn that, Colin?'

'The closer you are physically to the Senate building, the plazas, the gardens, or the Triumphal Arch raises the desirability of the land, makes you upper class and produces plebeians. It's based on simple rules of location to physical objects in the games [Caesar III].' Then, he added, 'I know that in the real world the answer is more likely how close you are to the senators, themselves – that defines class. But it's kinda the same.'

Colin's story illustrates two important aspects of simulations for learning. First, students often find simulations far more compelling than more traditional ways of representing knowledge; consequently, they spend more time engaging with them and make more discoveries. Second, students experience what they have learned from a robust simulation as their own discoveries. These simulations expose players to powerful new ways of seeing the world and encourage them to engage in a process of modeling, which is central to the way modern science operates. Many contemporary games—Railroad Tycoons, for instance—incorporate spreadsheets, maps, graphs and charts, which students must learn to use to play the game. Students are thus motivated to move back and forth across this complex and integrated information system, acting on the simulated environment on the basis of information gleaned from a wide range of different representations.

As games researcher Eric Klopfer cautions, however, simulations enhance learning only when we understand how to read them:

As simulations inform us on anything from global warming to hurricane paths to homeland security, we must know how to interpret this information. If we know that simulations give us information on probabilities we can make better decisions. If we understand the assumptions that go into simulations we can better evaluate that evidence and act accordingly. Of course this applies to decision makers who must act upon that information (police, government, insurance, etc.); it also is important that each citizen should be able to make appropriate decisions themselves based on that information. As it is now, such data is either interpreted by the general public as 'fact' or on the contrary 'contrived data with an agenda.' Neither of these perspectives is useful and instead some ability to analyze and weigh such evidence is critical. Simulations are only as good as their underlying models. In a world of competing simulations, we need to know how to critically assess the reliability and credibility of different models for representing the world around us (personal correspondence).

Students who use simulations in learning have more flexibility to customize models and manipulate data in exploring questions that have captured their own curiosity. There is a thin line between reading a simulation (which may involve changing variables and testing outcomes) and designing simulations. As new modeling technologies become more widely avail-



---

able and as the toolkits needed to construct such models are simplified, students have the opportunity to construct their own simulations. Bogost (2005) argues that computer games foster what he calls procedural literacy, a capacity to restructure and reconfigure knowledge to look at problems from multiple vantage points, and through this process to develop a greater systemic understanding of the rules and procedures that shape our everyday experience. Bogost writes, “Engendering true procedural literacy means creating multiple opportunities for learners—children and adults—to understand and experiment with reconfigurations of basic building blocks of all kinds” (p. 36). Young people are learning how to work with simulations through their game play, and schools should build on such knowledge to help them become critical readers and effective designers of simulation and modeling tools. They need to be given a critical vocabulary for understanding the kind of thought experiments performed in simulations and the way these new digital resources inform research across a range of disciplines.

### **What Might Be Done**

Students need to learn how to manipulate and interpret existing simulations and how to construct their own dynamic models of real world processes.

- Teachers in a business class ask students to make imaginary investments in the stock market and then monitor actual business reports to track the rise and falls of their “holdings.” This well-established classroom practice mirrors what youth do when they form fantasy sports leagues, tracking the performance of players on the sports page to score their results, and engaging in imaginary trades to enhance their overall standings. Both of these practices share a movement between imaginary scenarios (pretend investments or teams) and real-world data. The simulated activities introduce them to the logics by which their real-world counterparts operate and to actual data sets, research processes, and information sources.
- Groups such as OnRampArts in Los Angeles, Urban Games Academy in Baltimore and Atlanta, or Global Kids in New York City involve kids in the design of their own games. These groups see a value in having youth translate a body of knowledge—the history of the settlement of the New World in the case of OnRampArts’s Tropical America—into the activities and iconography of games. Here, students are encouraged to think of alternative ways of modeling knowledge and learn to use the vocabulary of game design to represent central aspects of the world around them.
- Simulation games such as SimCity provide a context for learning a skill Clark calls “embracing co-control” (2003, p 160). In this game, creating and maintaining a city requires exerting various forms of indirect control. Instead of having a top-down control to design a happy, thriving city, the player must engage in a bottom-up process, where the player “grows” a city by manipulating such variables as zoning and land prices. It is only through gaining a familiarity with all the parts of the system, and how they interact, that the player is able to nudge the flow in a way that respects the flow. Such a skill can be understood as a process of “com[ing] to grips with decentralized emergent order” (p. 160); a mandatory skill for understanding complex systems.



- 
- Students in New Mexico facing a summer of raging forest fires throughout their home state used simulations to understand how flames spread. Manipulating factors such as density of trees, wind, and rain, they saw how even minute changes to the environmental conditions could have profound effects on fire growth. This helped them understand the efficacy of common techniques such as forest thinning and controlled burns.

### **Performance — the ability to adopt alternative identities for the purpose of improvisation and discovery**

We have thus far focused on game play as a mode of problem-solving that involves modeling the world and acting on those models. Yet, game play also is one of a range of contemporary forms of youth popular culture that encourages young people to assume fictive identities and through this process develop a richer understanding of themselves and their social roles. In *What Video Games Have to Teach Us About Learning and Literacy* (2003), Gee coins the term, “projective identity” to refer to the fusion that occurs between game players and their avatars, the personas they assume in the game. Gee sees the term as playing on two senses of the word *project*: “to project one’s values and desires onto the virtual character” and “seeing the virtual character as one’s own project in the making” (p. 55). This projected identity allows the player to strongly identify with the character and thus have an immersive experience within the game, and at the same time to use the character as a mirror to reflect on his or her own values and choices.

Testing the educational video game, *Revolution*, with middle-school students, Francis (2006) found several compelling examples in which projected identities had pedagogical payoffs for participants. For example, Margaret, a girl who played a loyalist character in the game, which was set in colonial Williamsburg on the eve of the American Revolution, was shaken when she was shot by the redcoats in the midst of a street riot:

The townspeople were very mad. They went to the Governor’s mansion to attack. I support the red coats, but they started shooting at me, and then they arrested me. I felt horrified that they would do something like that to me. I don’t even believe in violence. I wonder what is going to happen to me. I run the tavern and I have no family. Will I get sent back to England or will I be able to stay here?

She had seen herself as a supporter of the British troops, and at worst an innocent bystander, but she came away from the experience with critical insights about political violence.

Francis built on this process of introspection and projection by asking students to write journals or compose short films reflecting in character on the events that unfolded in the game. In constructing and inhabiting these virtual characters, participants drew together multiple sources of knowledge, mixing things they had read or learned in other educational contexts, information explicitly contained within the game, and their own introspection based on life experiences to create characters that were more compelling to them than the simple digital avatars the designers had constructed. One can think of the process as closely paralleling what actors do when preparing for a role. Here, for example, is how a young African-American girl explained her



---

experiences in playing Hannah, a house slave (an explanation that reaches well beyond anything explicitly present in the games and she even invents actions for the nonplayer characters in order to help her make sense of her place in the social order being depicted):

You don't really have as much support as you would like because being a house slave they call you names, just because most of the time you're lighter skin—you're the master's kid technically...I had to find the ways to get by because, you know, it was hard. On one side, you don't want to get on the Master's bad side because he can beat you. On the other side, the slaves, they ridicule you and are being mean.

Children acquire basic literacies and competencies by learning to manipulate core cultural materials. In *The Braid of Literature: Children's World of Reading*, Wolf and Heath (1992) trace the forms of play that shaped Wolf's two preschool-aged daughters' relationship to the "world of words" and stories. Wolf and Heath are interested in how children embody the characters, situations, generic rules, and even specific turns of phrase, through their sociolinguistic play. Children do not simply read books or listen to stories; they re-enact these narratives in ways that transform them, and in this process, the authors argue, children demonstrate they really understand what they have read. This play helps them to navigate the world of stories and, at the same time, elements of stories help them to navigate real-world social situations. Children learn to verbalize their experiences of reading through these performances, and in the process develop an analytic framework for thinking about literacy.

Dyson's *Writing Superheroes: Contemporary Childhood, Popular Culture, and Classroom Literacy* (1997) extends this analysis of the connection between performance and literacy into the classroom, exploring how educators have used dramatizations to teach children to reflect more deeply on their experiences of stories. Wolf and Heath describe individualized play in the context of the home; Dyson recounts social play among peers. In both cases, children start with a shared frame of reference—stories they have in common, genres they all understand—to ensure that they understand the roles they are to play and the rules of their interaction. Performing these shared fantasies (such as the scenarios that emerge in superhero comics) allows children to better understand who they are and how they connect with the other people around them.

Role play is very popular with contemporary youth, whether cos-play of young anime fans (costume play based on characters from anime), the fusion with a digital avatar in computer gaming or fantasy role play, or the construction of alternative personas in subculture communities such the Goths. Such play has long been understood as testing identities, trying on possible selves, and exploring different social spaces. Stern (2005) stresses the forms of self-representation that are evident on teenagers' websites and blogs. "The ability to repeatedly reinvent oneself is particularly appealing since home pages and blogs can be updated as often as desired and because they may be produced anonymously" (p. 57).

These more elaborated and complex forms of role play may also provide a point of entry into larger spheres of knowledge. Consider, for example, this interview with a 17-year-old American girl:



---

I have been really interested in Japanese culture since I was in sixth grade. When I was in the seventh grade, I started studying Japanese on my own. When I got into high school, I started taking Japanese courses at Smith College. I got into costuming through anime, which is actually how I got interested in Japanese. And I taught myself how to sew. ...I'm a stage hog. I like to get attention and recognition. I love acting and theater. The biggest payoff of cos-play [costume play] is to go to the conventions where there are other people who know who you are dressed as and can appreciate your effort. At the first convention I ever went to, I must have had fifty people take my picture and at least ten of them came up and hugged me. It's almost like whoever you dress up as, you become that person for a day....People put the pictures up on their websites after the con. So after a con, you can search for pictures of yourself and if you are lucky, you will find five or ten" (Bertozzi and Jenkins, forthcoming).

For the young girl, assuming the role of a Jpop character demonstrated her mastery over favorite texts. Assuming this new identity requires a close analysis of the originating texts, genre conventions, social roles, and linguistic codes. She must go deep inside the story to find her own place within its world. In this case, she also has to step outside the culture that immediately surrounds her to embrace a text from a radically different cultural tradition. She has sought out more information about forms of Asian popular culture. In the process, she has begun to re-imagine her relations to the world—as part of an international fan culture that remains deeply rooted in the everyday life of Japan. This search for more information expresses itself across a range of media: the videos or DVDs she watches of Japanese anime, the recordings of Jpop music on MP3 or CDs, information on the Internet and information she shares with her fellow fans about her own activities, the costumes she generates as well as the photographs of her costumes, the magazines and comics she reads to learn more about Japanese popular culture, and her face-to-face contacts with fellow fans. These activities that center on popular culture in turn translate into other types of learning. As a middle-school student, she began to study Japanese language and culture first on her own and later at a local college.

Role play, in particular, should be seen as a fundamental skill used across multiple academic domains. So far, we have suggested its relevance to history, language arts, and cultural geography. Yet, this only scratches the surface. Whether it be children on a playground acting out and deciphering the complex universe of Pokemón, or Orville Wright pretending to be a buzzard gliding over sand dunes, or Einstein imagining himself to be a photon speeding over the earth, role playing enables us to envision and collaboratively theorize about manipulating entirely new worlds. Consider, for example, the way role play informs contemporary design processes. Increasingly, designers construct personae of would-be users, who can serve to illustrate different contexts of use or different interests in the product. These personae are then inserted into fictional scenarios, allowing designers to test the viability of their design and its ability to serve diverse needs. In some cases, this process also involves the designers themselves acting out the different roles and thereby identifying the strengths and limits of their approaches. Improvisational performance, then, represents an important life skill, one that balances problem-solving and creative expression, invites us to reimagine ourselves and the world, and allows participants to examine a problem from multiple perspectives.



---

Educators have for too long treated role play as a means to an end—a fun way to introduce other kinds of content—yet we argue that role-play skills may be valuable in their own right and are increasingly central to the way adult institutions function. Performance brings with it capacities to understand problems from multiple viewpoints, to assimilate information, to exert mastery over core cultural materials, and to improvise in response to a changing environment. As with play and simulation, performance places a new stress on learning processes—on how we learn more than what we learn. These learning processes are likely to sustain growth and learning well beyond the school years.

### **What Might Be Done**

Performance enters into education when students are asked to adopt fictive identities and think through scenarios from their perspective. These identities may be assumed within the physical world or the virtual world.

- The Model United Nations, a well-established educational project, brings together students from many different schools, each representing delegations from different member countries. Over the course of a weekend, participants work through current debates in foreign policy and simulate the actual procedures and policies of the international organization. Students prepare for the Model United Nations by doing library research, listening to lectures, and participating in group discussions, and they return from the event to share what they learned with other classmates through presentations and written reports.
- The Savannah Project, created by researchers at the University of Bristol, encourages children to play the parts of lions stalking their prey in physical spaces, such as the school playground, but reading them through fictional data provided on handheld devices. This approach encourages students to master the complex ecosystem of the veldt from the inside out—learning the conditions that impinge on the lion’s chances of survival and the skills they need to feed on other local wildlife.
- Teachers in a range of subjects can deploy what Shaffer (2005) calls “epistemic games.” In an epistemic game, the game world is designed to simulate the social context of a profession (say, urban planning), and by working through realistic but simulated problems, players learn the ways of acting, interacting, and interpreting that are necessary for participating in the professional community. In effect, rather than memorizing facts or formulas, through performances of being an urban planner, lawyer, doctor, engineer, carpenter, historian, teacher, or physicist the player learns the particular ways of thinking of these professions.
- Medieval Space, a MySpace clone created by teachers at Byrd Middle school, asked students to create online profiles for the various historical figures studied in their classes. Rather than seeing figures such as Richard III, Henry VI, and Queen Elizabeth as distinct characters, students explored the complex social relationships between them by imagining how they might have interacted if they had online spaces in the fifteenth century. For example, students were asked to imagine what their character’s current song might be, with as 2Pac’s “Only God Can Judge Me Now” listed for Richard III. See <http://www.incsb.org/wpmu/bionicteacher/?p=142> for more info.



---

## **Appropriation — the ability to meaningfully sample and remix media content**

Journalists have frequently used the term, “Napster generation,” to describe the young people who have come of age in this era of participatory culture, reducing their complex forms of appropriation and transformation into the simple, arguably illegal, action of ripping and burning someone else’s music and sharing the files. Recall that the Pew study (Lenhardt & Madden, 2005) found that almost one-quarter of American teens had sampled and remixed existing media content (music, film clips, image, etc). The digital remixing of media content makes visible the degree to which all cultural expression builds on what has come before. Appropriation is understood here as a process by which students learn by taking culture apart and putting it back together.

Art does not emerge whole cloth from individual imaginations. Rather, it emerges through the artist’s engagement with previous cultural materials. Artists build on, are inspired by, appropriate and transform other artists’ work. They do so by tapping into a cultural tradition or deploying the conventions of a particular genre. Beginning artists often undergo an apprenticeship, during which they try on for size the styles and techniques of other, more established artists. Even well established artists work with images and themes that have some currency within the culture. Of course, this is not how we generally talk about creativity in schools, where the tendency is to discuss artists as individuals who rise upon or stand outside any aesthetic tradition. All artists work within traditions; they all also violate conventions. School discourse, however, focuses on one over the other.

Our focus on autonomous, creative expression falsifies the actual process by which meaning is generated and new works produced. Most of the classics we teach in the schools are themselves the product of appropriation and transformation, or what we would now call “sampling” and “remixing.” Homer remixed Greek myths to construct *The Iliad* and *The Odyssey*; Shakespeare sampled his plots and characters from other author’s plays; the Sistine Chapel ceiling mashes up stories and images from across the entire Biblical tradition. Lewis Carroll spoofs the vocabulary of exemplary verses that were then standard to formal education. Many core works of the western canon emerged through a process of retelling and elaboration: the figure of King Arthur shifts from an obscure footnote in an early chronicle to the full-blown character of Morte D’Arthur within a few centuries, as the original story is built on by many generations of storytellers.

Many of the forms of expression that are most important to American youth accent this sampling and remixing process, in part because digitization makes it much easier to combine and repurpose media content than ever before. Jazz, for example, evolved through improvisation around familiar themes and standard songs, yet the digital remixing of actual sounds that occurs in techno or hip hop music has raised much greater alarm among those who would insist on strong protections of copyright. Fan fiction (stories about characters or settings in original works written by fans of the original work, not by the original authors) clearly involves the transformative use of existing media content, yet it is often treated as if it were simply a new form of piracy. Collage has been a central artistic practice throughout the twentieth century,



---

one closely associated with the kinds of new creative works that youth are generating by manipulating images with the software, Photoshop. Despite the pervasiveness of these cultural practices, school arts and creative writing programs remain hostile to overt signs of repurposed content, emphasizing the ideal of the autonomous artist. Yet, in doing so, they sacrifice the opportunity to help youth think more deeply about the ethical and legal implications of repurposing existing media content, and they often fail to provide the conceptual tools students need to analyze and interpret works produced in this appropriative process.

Appropriation may be understood as a process that involves both analysis and commentary. Sampling intelligently from the existing cultural reservoir requires a close analysis of the existing structures and uses of this material; remixing requires an appreciation of emerging structures and latent potential meanings. Often, remixing involves the creative juxtaposition of materials that otherwise occupy very different cultural niches. For beginning creators, appropriation provides a scaffolding, allowing them to focus on some dimensions of cultural production and rely on the existing materials to sustain others. They are able, for example, to focus more attention on description or exposition if they can build on existing characters and plots. They learn how to capture the voice of a character by trying to mix borrowed dialog with their own words. Mapping their emotional issues onto pre-existing characters allows young writers to reflect on their own lives from a certain critical distance and work through issues, such as their emerging sexualities, without facing the stigma that might surround confessing such feelings in an autobiographical essay. These students learn to use small details in the original works as probes for their own imagination, overcoming some of the anxiety of staring at a blank computer screen. Building on existing stories attracts wider interest in their work, allowing it to circulate far beyond the community of family and friends. In turn, because they are working with a shared narrative and many others have a stake in what happens to these characters, they receive more feedback on their writing.

### **What Might Be Done**

Appropriation enters education when learners are encouraged to dissect, transform, sample, or remix existing cultural materials.

- The MIT Comparative Media Studies Program hosts a workshop each year, asking students to work in teams to think through what would be involved in transforming an existing media property (a book, film, television series, or comic book) into a video or computer game and then preparing a “pitch” presentation for their game: beginning with a pre-existing property allows students to get started quickly and more or less on equal footing given that they are able to build on a text they have in common as readers rather than one created by an individual student author; the process of identifying core properties of the original work teaches students important skills at narrative and formal analysis while the development of an alternative version of the story in another medium emphasizes the creative expansion of the original content (Jenkins, 2005b).
- The crew of Public Radio International’s program, *Sound & Spirit*, has encouraged students in greater Boston to develop scripts and record radio broadcasts that involve critical



---

commentary of existing songs to explore a common theme or topic. They have found that this process of sampling and remixing music motivates youth to think more deeply about the sounds they hear around them and motivates them to approach school-related topics from a fresh perspective.

- Artist and filmmaker Juan Devis (Jenkins, 2006b) has been working with the University of Southern California Film School, the Institute for Media Literacy, and the Los Angeles Leadership Academy on a project with minority youth. The youth will develop an online game based on Mark Twain's *Huckleberry Finn*. Devis drew a number of strong parallels between the experiences of minority youth in Los Angeles and the world depicted in Twain's novel — including parallels between “crews” of taggers and the gang of youth that surround Huck and Tom, the use of slang as a means of separating themselves from their parents' culture, the complex experience of race in a society undergoing social transitions, and the sense of mobility and “escape” from adult supervision.
- Ricardo Pitts-Wiley (Jenkins, 2006b), the artistic director of Mixed Magic Theatre, has been working with students from Pawtucket, Rhode Island, high schools to develop what he calls his “urban Moby Dick” project. Students worked closely with mentors—artists, law enforcement officers, business leaders, from the local community—to explore Herman Melville's classic novel together. Through a process of reading, discussion, improvisation, and writing, they are scripting and staging a modern version of the classic whaling story, one that acknowledges the realities of contemporary urban America. In their version, the “Great White” turns out not to be a whale but the international drug cartel. Ish and Quay are two members of Ahab's posse as he goes after the vicious force that took his leg and killed his wife. Through reimagining and reworking Melville's story, they come to a deeper understanding of the relationships between the characters and of some of the core themes about male bonding and obsession that run through the book.
- Renee Hobbs (Jenkins, 2006b), a 20-year veteran of the media literacy movement, recently launched a new website—*My Pop Studio*—that encourages young middle-school and early high school aged girls to reflect more deeply about some of the media they consume—pop music, reality television, celebrity magazines—by stepping into the roles of media producers. The site offers a range of engaging activities, including designing an animated pop star and scripting their next sensation, reediting footage for a reality television show, and designing the layout for a teen magazine. They are asked to reflect on the messages the media offers on what it is like to be a teen girl in America today and to think about the economic factors shaping the culture that has become so much a part of their everyday interactions with their friends.

### **Multi-tasking — the ability to scan one's environment and shift focus onto salient details on an ad hoc basis**

Perhaps one of the most alarming changes in adults' view is the perceived decline in young people's attention spans with the rise of digital media. Attention is undoubtedly an important cognitive ability. All information to be processed by our brains is temporarily held in short-